



Indicators for the Scheldt estuary

Socio-economic importance of ports



The ports in the river Scheldt have an important function as gateway, and socio-economic influence in the region. The volume of handled goods in the ports increased from 113 million tonnes in 1980 to 250 million tonnes in 2008, an absolute record. The container traffic in the port of Antwerpen experienced an explosive growth. The Scheldt ports are the strongest growers in the "Hamburg - Le Havre range" since 1980 and handle more than 20% of the total cargo traffic in this area. In 2007, total employment in the ports increased at least 5% (Terneuzen) and up to 22% (Antwerpen) compared to 2002. The total added value experienced a strong growth compared to 2002: 57% for Vlissingen and Terneuzen and respectively 43% and 31% for Antwerpen and Gent.

Why monitor this indicator?

The Long-term Vision for the Scheldt estuary [1] sets targets for 2030 by which the Scheldt ports (Vlissingen, Terneuzen, Gent and Antwerpen) can optimally respond to developments in the global economy and maintain their leading position in logistics and industrial position, within the framework of the priority functions for 'accessibility'. This vision also underlines the importance of optimizing employment and added value created in the ports in relation to the other functions performed by the Scheldt estuary. Employment in the Scheldt ports expresses the socio-economic importance of ports. A successful port policy should be framed in an international context. Therefore, some of these figures are presented in a larger context, and a comparison is made with the ports of the 'Hamburg - Le Havre range' in the North West Europe (see below, figure 2).

The strategic (master) plans for the Scheldt ports set the policy options for achieving a sustainable port development. The socio-economic role of ports plays an important role in this development.

The draft Strategic Master Plan of Zeeland Seaports (ports of Vlissingen and Terneuzen) [2] for the period 2009 to 2020 aims to increase the volume of traffic to 50 million tonnes in 2020. By 2020, the targets for port-related employment and added value are also set at a 20% growth.

The draft strategic plan for the Gent canal zone [3] focuses on an increase of transshipments to 44-49 million tonnes in 2020 and 58 million tonnes in 2030, taking into account the potential for new maritime infrastructure. If a new sea lock at Terneuzen can be achieved by 2018, the development of the port of Gent will be divided into two phases. In the period until 2018 the port will mainly focus on qualitative development of the maritime traffic, added value or port employment with a more ambitious quantitative growth after 2018.

The interim strategic plan of the port of Antwerpen [4] states in its vision document a growth in the volume of handled goods to 188-228 million tonnes by 2015 and 230-301 million tonnes by 2030. The plan also sets targets on the basis of forecasts for added value and employment. Total employment is considered to grow to 138,000-153,000 full-time equivalent (FTE, for more information on the units of the measurement see fact sheet 'employment in the Scheldt ports' [5]) in 2015 and 138,000-160,000 FTE in 2030. For the total added value a revenue of 16 - 19 billion euro for 2015 and 18-23 billion euro for 2030 is taken into account.



What does the indicator show?

Volume of handled goods in the ports of the river Scheldt

The volume of goods handled in the ports of the river Scheldt increased from 113 million tonnes in 1980 to 250 million tonnes in 2008, an absolute record (see figure 1). The port of Antwerpen represented the main part with a volume of 189 million tonnes in 2008. While Antwerpen and Zeeland Seaports more than doubled their volumes in 2008 compared to 1980, the flow of maritime trade in the port of Gent showed a fluctuating course between 18 million tonnes in 1980 and 27 million tonnes in 2008.

Especially the trade of containers increased (an increase by a factor of 16 in 2008 compared to 1980) and it is the port of Antwerpen which is specialised in this type of cargo. The maritime traffic of other forms of transport types, experienced a smaller increase (liquid bulk, roll-on/roll-off), a status quo (dry bulk) or even a slight decrease (other cargo). The port of Gent promoted its services mainly in the dry bulk sector while Zeeland Seaports also traded for liquid bulk besides dry bulk.

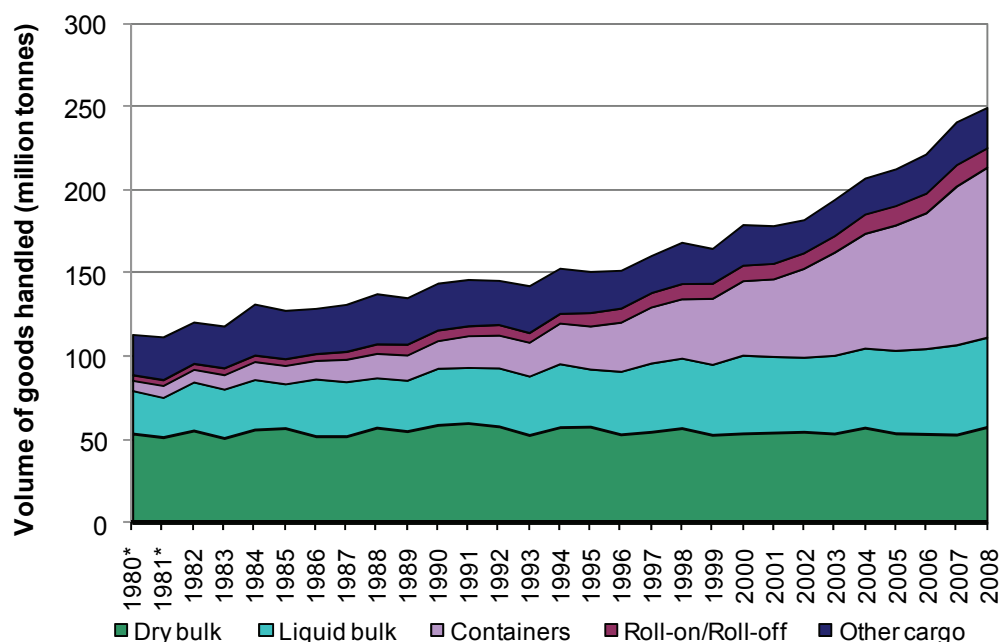


Figure 1: Total volume of goods handled (by type of transport) at the Scheldt ports.* In 1980 and 1981 the allocation of cargo by transport category in the port of Vlissingen was determined on the basis of the average for the period 1982-1986, in that port. Source: Port Authorities and Flemish Port Commission (Vlaamse Havencommissie).

Ports and port policy can not be separated from the international context. A comparison of the cargo traffic in other ports in the 'Hamburg - Le Havre range' (see figure 2) gives an idea of the competitiveness of the Scheldt ports in the broader international context and provides an objective view on the developments.



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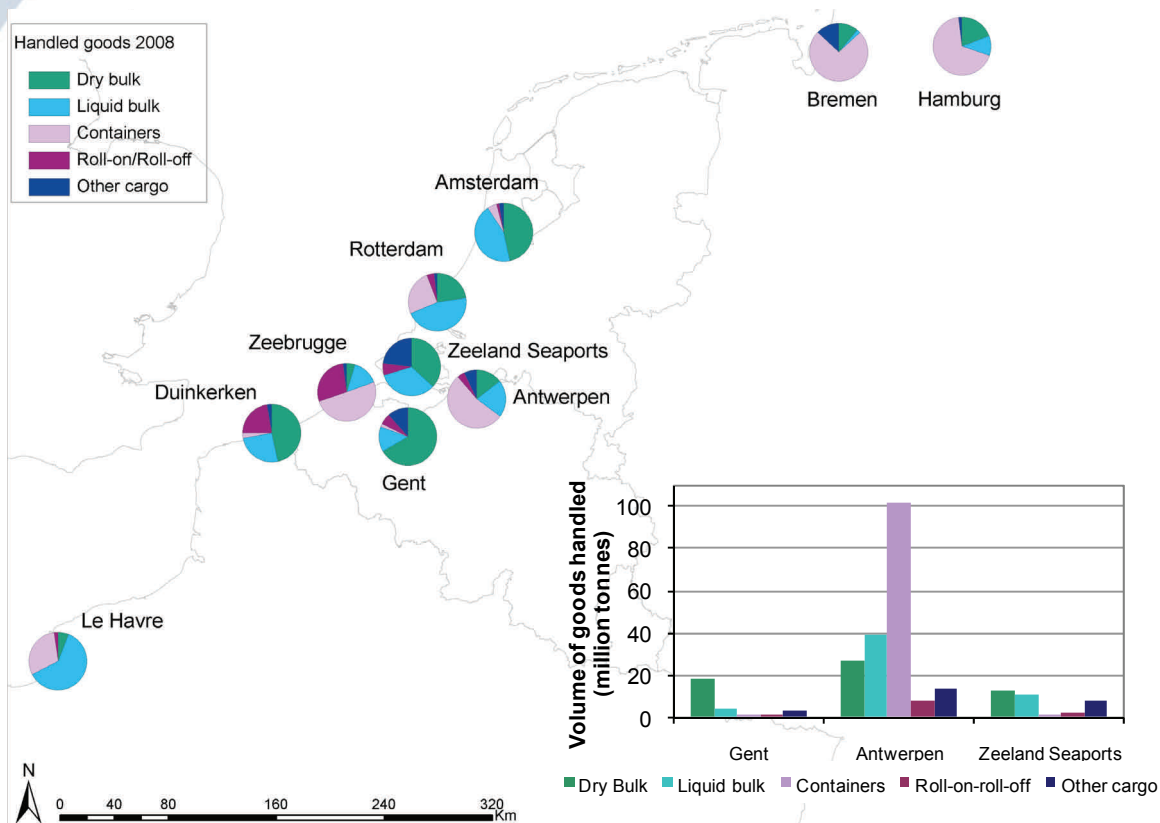


Figure 2: Map of the Scheldt ports and other ports in the 'Hamburg - Le Havre range' with the relative and absolute (inserted graph) amount of handled goods by types of transport in 2008. Source: Port Authorities and Flemish Port Commission (Vlaamse Havencommissie).

The market share of the Scheldt ports within the 'Hamburg - Le Havre range' was more than 20% since 1982 (see figure 3). The absolute increase in cargo traffic in the ports in 2008 compared to 1980 also resulted in a 4% rise in its market share in the 'Hamburg - Le Havre range'. The Scheldt ports are thus the strongest growers in the 'Hamburg - Le Havre range'.

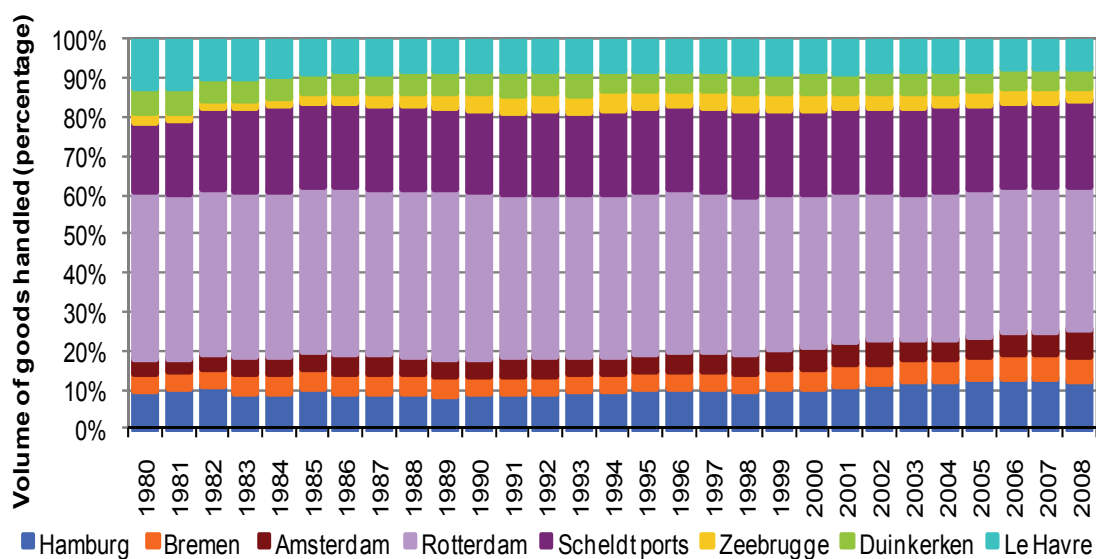


Figure 3: Total share in cargo traffic (%) in the Scheldt ports compared to the 'Hamburg - Le Havre range'. Source: Port Authorities and Flemish Port Commission (Vlaams Havencommissie).



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Despite the fact that the number of traffic movements or visiting ships in the Scheldt ports experienced a slight decrease compared to 1990, total volume of handled goods (in tonnes) in the same period increased by more than 70% (see figure 4). The number of vessels with a larger gross tonnage (GT) or the average GT per ship has therefore increased. Especially the port of Antwerpen is determining this trend.

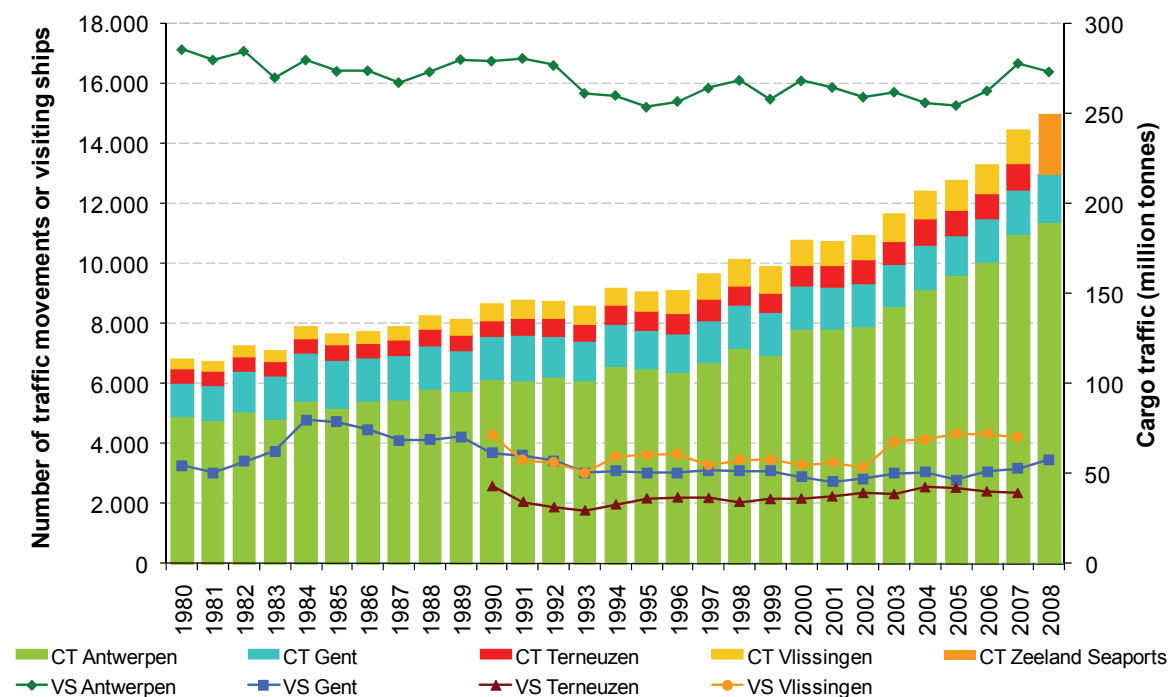


Figure 4: Total cargo traffic (CT, in million tonnes) and number of movements or visiting ships (VS) at the Scheldt ports, expressed as growth in % compared to reference year 1990. Source: Port Authorities and Flemish Port Commission (Vlaamse Havencommissie) (CT), National Ports council and Annual reports on Flemish ports (VS).

Employment in the ports of the river Scheldt

Ports create direct and indirect employment and are therefore one of the main drivers in the local economy and the prosperity of the local population. Direct employment is measured in terms of the industries located within or in the immediate vicinity of the ports. The indirect employment is the one generated respectively by suppliers and subcontractors of these branches, based in Belgium and in the Netherlands.

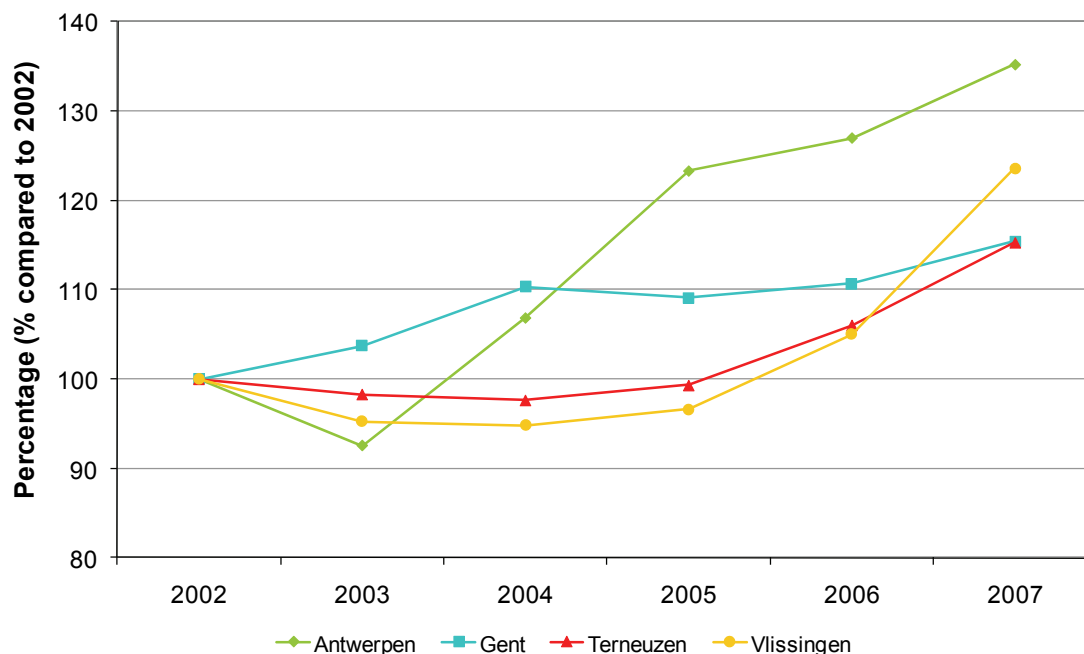
Given the differences in methodology, the absolute figures for employment and added value in the Dutch and Flemish ports can not be compared to each other. The trends shown are therefore based on relative percentages compared to a reference year, while the absolute figures were added as annex table.

Total employment is on the rise in all Scheldt ports. This growth is mainly due to an increase in indirect employment and to a lesser extent an increase in direct employment. Direct employment in the ports of Antwerpen and Gent fluctuated during the period 1995 - 2007 between 97% and 104% compared to the reference year 2002. Direct employment in the port of Terneuzen dropped since 2002 by 4%. The port of Vlissingen scored best in terms of growth in direct employment with an increase of 9% compared to 2002. Detailed graphs on direct employment are available via the indicator page (<http://www.scheldemonitor.org/indicatorfiche.php?id=2>) and the data portal of the Scheldemonitor.



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In all Scheldt ports, indirect employment experienced a stronger increase than direct employment compared to 2002 (see figure 5). Antwerpen (+35% compared to 2002) and Vlissingen (+24% compared to 2002) were the fastest-growing. Gent and Terneuzen experienced in 2007 an increase of 15% in indirect employment compared to 2002.



| Indirect employment | | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 |
|----------------------------|------------|--------|--------|--------|---------|---------|---------|
| Full time equivalent (FTE) | Antwerpen | 87.426 | 80.883 | 93.384 | 107.797 | 111.039 | 118.236 |
| | Gent | 36.799 | 38.170 | 40.590 | 40.158 | 40.721 | 42.462 |
| Employed persons | Terneuzen | 6.936 | 6.818 | 6.772 | 6.888 | 7.354 | 7.994 |
| | Vlissingen | 5.611 | 5.345 | 5.322 | 5.422 | 5.894 | 6.937 |

Figure 5: Evolution of indirect employment of the Scheldt ports (growth in % compared to reference year 2002). The absolute figures in the table are not comparable between Flanders and the Netherlands due to differences in methods, definitions and units. Source: Rebel Group Advisory & Buck Consultants International, National Bank of Belgium (NBB).

Despite the increase in volume of goods handled in the Scheldt ports, the direct labour input per 1,000 tonnes of handled goods (see figure 6) decreased.

The port of Antwerpen achieved on average over the period 1995-2007 a commitment of 0.47 FTE per 1,000 tonnes of goods in direct employment. For more information on the units, see the data fact sheet [5]). Despite the increase of 69% in cargo traffic, there is a decline of 38% in direct employment per 1,000 tonnes of goods compared to 1995. The Zeeland Seaports have also experienced a decrease of 16.7% compared to 2002, with an average direct employment of 0.52 persons employed per 1,000 tonnes of handled goods (2007). The port of Gent was the most labour-intensive port with an average direct employment of 1.18 FTE per 1,000 tonnes of cargo. Again, the relative direct labour effort per tonne decreased by 13.7% compared to 1995.

This measurement is in part characteristic of the type of specialized transport services of the port. In an industrial port, such as Gent, more jobs are created within the port (direct employment).



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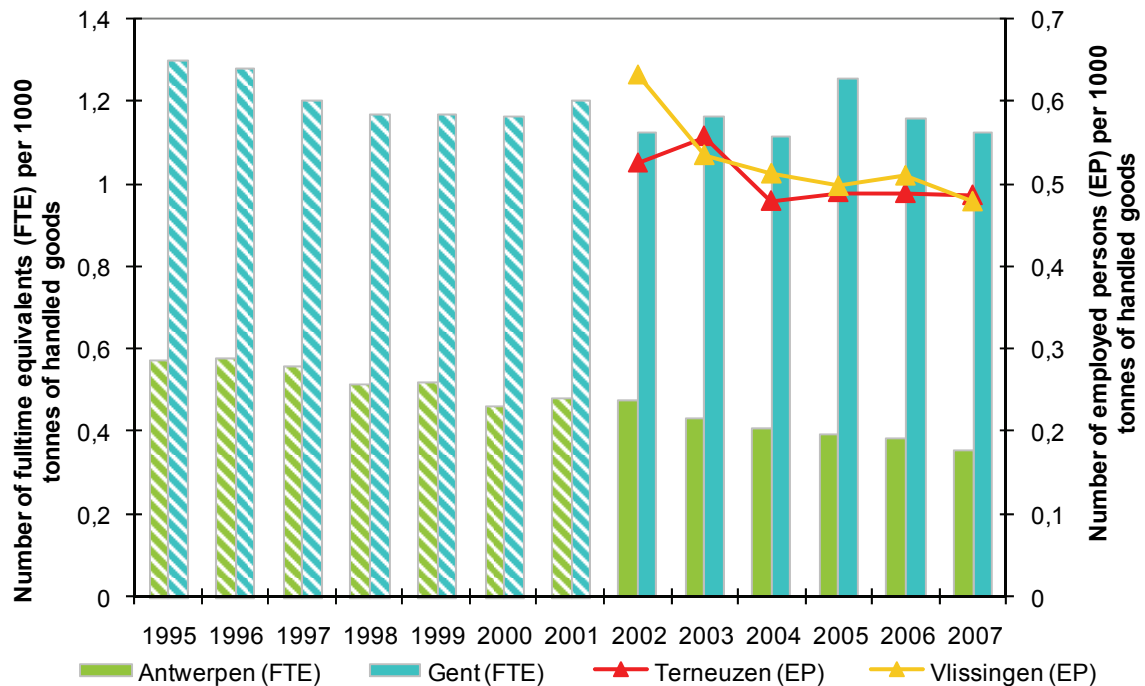


Figure 6: Development of direct employment (DE) versus the volume of handled goods (HG) in the Scheldt ports. The figures are not comparable between Flanders and the Netherlands due to differences in methods, definitions and units. For the Flemish ports, available timeseries cover the period 2002-2007. The figures for the period 1995-2001 only indicate a trend. Source: Port Authorities and Flemish Port Commission – Vlaamse Havencommissie (HG), Rebel Group Advisory & Buck Consultants International, National Bank of Belgium (NBB) (DE).

Added value of the ports in the river Scheldt

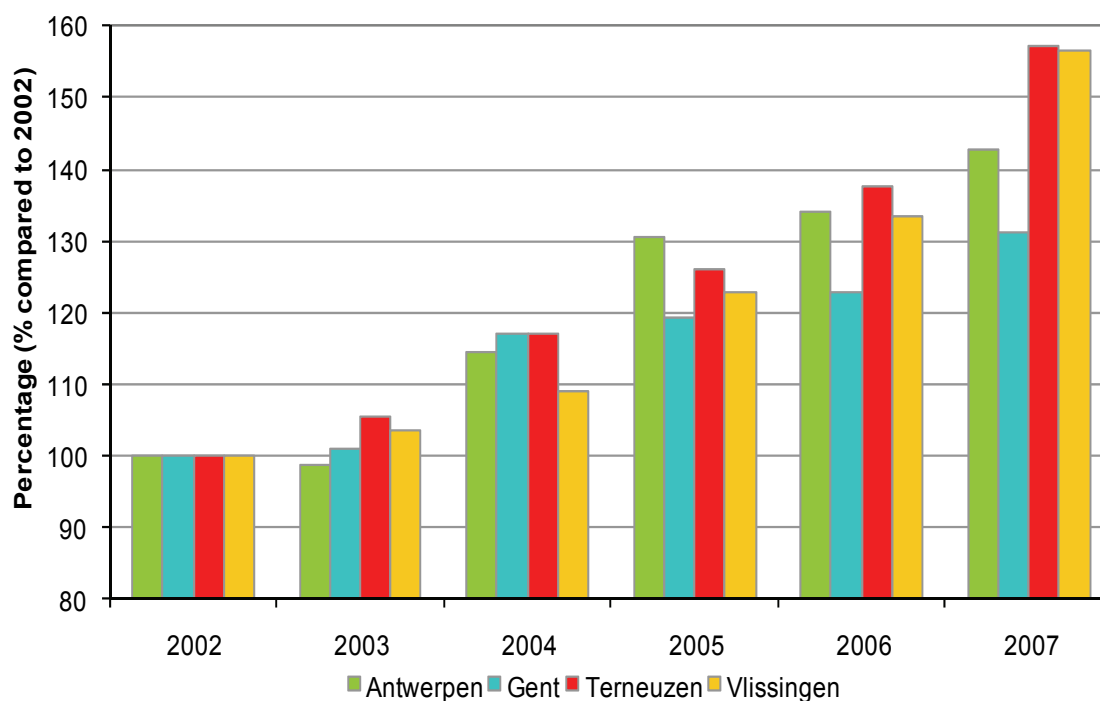
The added value of ports is a measure of the efficiency of economic growth. The added value refers to what a company or firm adds to the purchased goods and services of its production process. This added value is calculated based on staff costs, depreciation, taxes and profits. The direct effects of the added value refer to industries within or in the immediate vicinity of the ports, while the indirect effects are those generated respectively by Belgium- and Netherlands-based suppliers and subcontractors of these branches.

The total value of the Scheldt ports in the period 2002 - 2007 rose faster than total employment. It should however be noted that the officially reported figures do not take into account inflation. Available figures for the direct added value for the previous period covering 1995 - 2001, of the Flemish Scheldt ports were therefore not used in the measurement. The method for calculating the added value is however the same for all years (methods for Flanders and the Netherlands being different).

Growth in total value added in the Scheldt ports was realized by the increase in both direct and indirect added value. In 2007, Vlissingen and Terneuzen increased their total value by 57% compared to 2002. The port of Antwerpen experienced a growth in total added value of 43% compared to 2002. Gent got a boost of 31% compared to 2002 (see figure 7).



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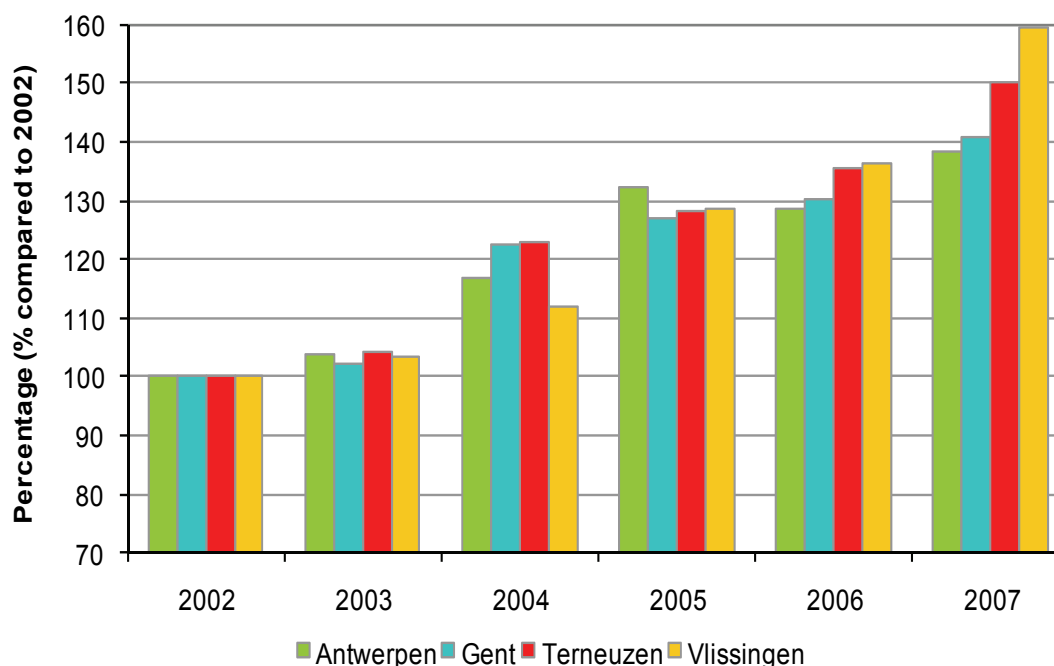
| Total added value | | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 |
|----------------------------------|------------|--------|--------|--------|--------|--------|--------|
| Million euro (current values) | Antwerpen | 14.345 | 14.148 | 16.424 | 18.720 | 19.247 | 20.487 |
| | Gent | 5.868 | 5.935 | 6.871 | 7.000 | 7.200 | 7.692 |
| | Terneuzen | 3.522 | 3.712 | 4.127 | 4.437 | 4.852 | 5.534 |
| | Vlissingen | 1.317 | 1.364 | 1.437 | 1.618 | 1.759 | 2.064 |

Figure 7: Evolution of the total added value of the Scheldt ports (growth in % compared to reference year 2002). The absolute figures in the table are not comparable between Flanders and the Netherlands due to differences in methodologies and definitions. Source: Rebel Group Advisory & Buck Consultants International, National Bank of Belgium (NBB).

The direct added value added in the Flemish Scheldt ports increased by 41% in Gent and by 38% in Antwerpen since 2002 (based on current prices, without taking into account inflation). The growth here is slightly less pronounced than that of Zeeland Seaports, respectively 50% and 59% for Terneuzen and Vlissingen (see figure 8).



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| Direct added value | | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 |
|-------------------------------|------------|-------|-------|-------|-------|-------|-------|
| Million euro (current values) | Antwerpen | 7.140 | 7.424 | 8.346 | 9.443 | 9.176 | 9.884 |
| | Gent | 2.742 | 2.798 | 3.356 | 3.487 | 3.571 | 3.860 |
| | Terneuzen | 2.236 | 2.330 | 2.750 | 2.868 | 3.029 | 3.354 |
| | Vlissingen | 857 | 887 | 958 | 1.101 | 1.170 | 1.366 |

Figure 8: Development of the direct added value of the Scheldt ports (growth in % compared to reference year 2002). The absolute figures in the table are not comparable between Flanders and the Netherlands due to differences in methodologies and definitions. Source: Rebel Group Advisory & Buck Consultants International, National Bank of Belgium (NBB)

The indirect added value in all Scheldt ports experienced a significant increase compared to 2002. The strongest growers were Vlissingen and Terneuzen (respectively 70% and 52%). Gent had the smallest increase (+ 31%), Antwerpen realized an increase in indirect added value of 47% compared to reference year 2002. Graphs related to the indirect value added are available via the indicator page (<http://www.scheldemonitor.org/indicatorfiche.php?id=2>) and the data portal of the Scheldemonitor.

The direct added value added per tonne of cargo in all Scheldt ports has risen in recent years (see figure 9). The port of Terneuzen, with an average of 198 euros added value per tonne over the period 2002-2007, realized the largest increase compared to 2002: 44%. Vlissingen experienced an increase by 10% to a value of 72 euros per tonne in 2002. Gent achieved an average direct added value of 138 euros per tonne in the same period, while in Antwerpen the average was 55 euros per tonne (current prices).



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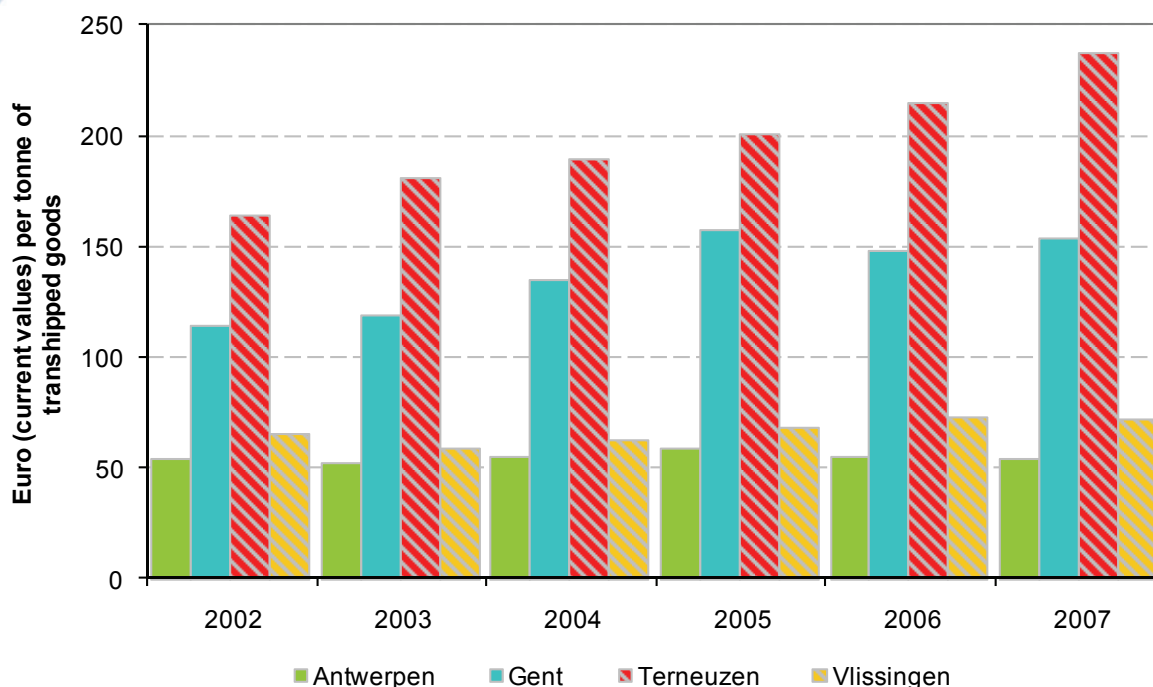


Figure 9: Evolution of the direct added value (AV, euro, current prices) compared to the transshipment of goods (TG, tonnes) in the port. Note: Flanders and the Netherlands have different methods of calculating added value, see data fact sheet [6]. Source: Port Authorities and Flemish Port Commission-Vlaamse Havencommissie (TG), Rebel Group Advisory & Buck Consultants International, National Bank of Belgium (NBB) (AV).

It will not be possible to review whether the goals set forward for the Scheldt ports were actually achieved, before 2015 at the earliest: in 2015 (and 2030) for the port of Antwerpen, in 2020 for Zeeland Seaports, and in 2020 and 2030 for the port of Gent.

Where do the data come from?

- The data on added value and employment are published in the annual reports 'Havenmonitor' (port monitor) by Rebel Group Advisory and Buck Consultants International (U.S.) [7] and 'Economic importance of the Belgian ports: Flemish maritime ports, Liège port complex and the port of Brussels' by the National Bank of Belgium (NBB, VL) [8].
- The data on traffic of goods in the ports of the 'Hamburg - Le Havre range' are available on the website of the 'Vlaamse Havencommissie (Flemish Port Commission) (Economic and Social Council of Flanders; SERV - VHC; <http://www.vlaamsehavencommissie.be>).
- The details of ship movements were obtained from the National Port Council (<http://www.havenraad.nl>) and from 'Jaaroverzicht Vlaamse havens', the annual reports on Flemish ports [9].

Opportunities and threats

Port authorities and governments can rely on well-developed monitoring and reporting on port activities and policy support. The port strategies set clearly measurable goals which take into account the specificity of each port and the operational capacities and infrastructure in place. While these policy assessments are expected at the earliest in 2015, the figures indicate a positive development, especially with regard to indirect effects in employment and added value. Continued efforts in the standardization



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of methods and definitions, and the comparability of these data, will support a further strategic integration of the Scheldt ports in the wider region.

The trading of goods and creation of jobs and added value, provides new opportunities and economic prosperity, but also new demands in terms of (port) infrastructure, facilities and associated services and the use of open space and raw materials. Shipping and port activities like other sources such as transportation, households, industry and agriculture, emit greenhouse gases and other pollutants which may generate negative effects on human health and ecosystems. Hinterland connections for shipping goods to and from the ports have different degrees of environmental impact (see indicator 'environmental effects of ports and shipping'). The ever increasing expansion of ports and shipping has its effects on marine safety and traffic (see indicator 'nautical management'). The accessibility of the Scheldt ports requires constant maintenance dredging in the channels. The effects of dredging and the disposal of dredged sediments are monitored by applying a 'flexible dredging and disposal strategy' and scientifically validated criteria for disposal of dredged material (see indicator 'soil interfering activities'). Through a monitoring program, the area of the present ecotopes or habitats, especially the ecologically valuable 'low-dynamic' ecotopes, are followed-up to determine effects of dredging and disposal activities on the ecosystem (see indicator 'morphology and dynamics in the estuary'). The cost of this maintenance dredging is minimal compared to the economic added value it generates in ports: a 140th part of the direct added value generated by the port of Antwerpen alone and a 280th part of the total added value in that port (average annual figures based on the period 2002-2007).

Besides the role of ports in the socio-economic development of the region, their contribution to achieving local objectives in terms of environmental quality (surface water, air, noise) and nature (diversity of habitats and species) is also substantial or increasing. Therefore, the Scheldt ports have conducted (or are in the process of conducting), the required inventories as a basis for achieving conservation objectives (IHD) for the Special Areas of Conservation (SACs) and the Special Protection Areas (SPAs) respectively, for the Habitats and Birds Directive. In addition, the objectives of nature conservation are also evaluated in view of other developments, strategic notes, Port Nature Conservation plans, and Environmental Impact Statements. The spatial Structure Plan Flanders (ruimtelijk structuurplan Vlaanderen) sets a target of a maximum of 5% of all sea port areas to be reserved for Environmental Infrastructure (EI). There is growing interest in the wellbeing of neighbouring communities of port areas, for the optimization of land use, sustainable solutions for hinterland transport by increasing the share of environmentally friendly forms of transport such as rail, inland waterways and coastal shipping (see indicator 'environmental effects of ports and shipping'), an efficient use of resources and energy and a continued reduction in the emissions of waste. The individual strategic policies formulate different accents for each of the ports [2, 3, 4]. Port authorities also reflect on the development of future indicators for rational land use and e.g. ecological footprint (carbon footprint) of port activities.

The technical fact sheets of the measurements in this indicator describe definitions, data and methodology, and their limitations. The fact sheets are available at: <http://www.scheldemonitor.org/indicatorfiche.php?id=2>

Integration with other indicators/measurements?

In order to interpret the present data and figures in terms of sustainable ports and shipping in the Scheldt estuary, it is important to integrate them with results from other indicators e.g. 'environmental effects of ports and shipping', 'nautical management', 'soil interfering activities' (including the 'cost of maintenance dredging'), 'status of species and habitats', 'morphology and dynamics in the estuary' (including the 'changes in ecotopes'), 'threats to biodiversity' and 'population pressure' (including 'welfare').



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